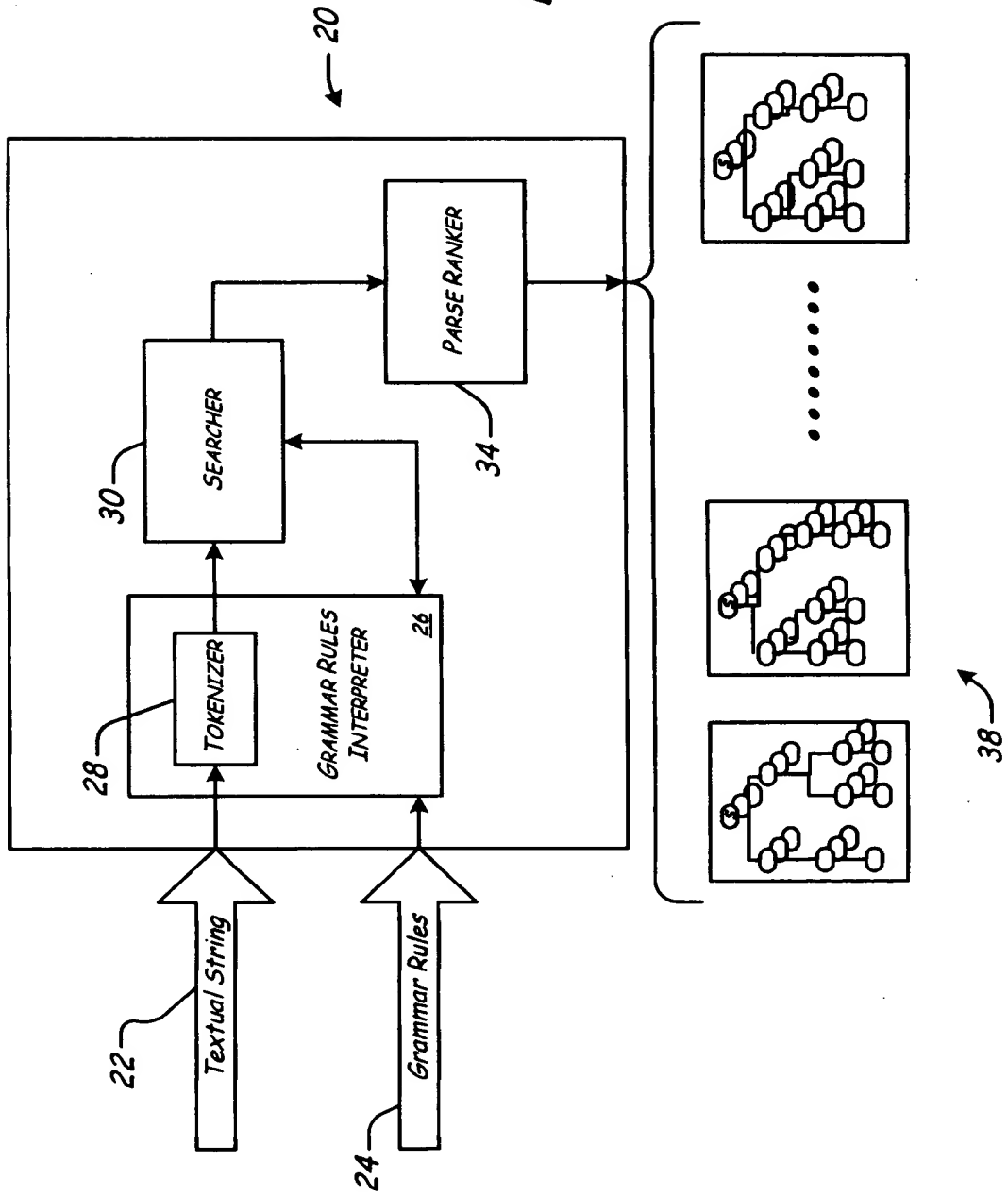


FIG. 1
Background



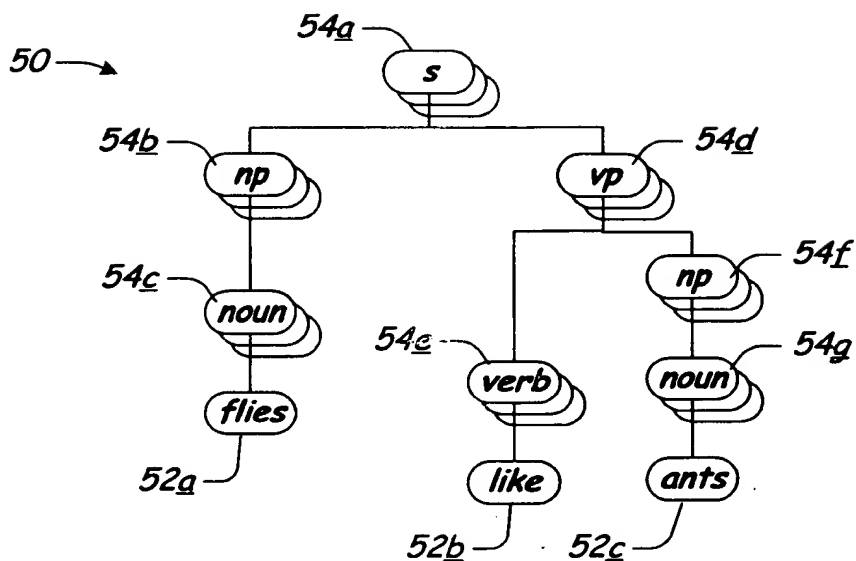
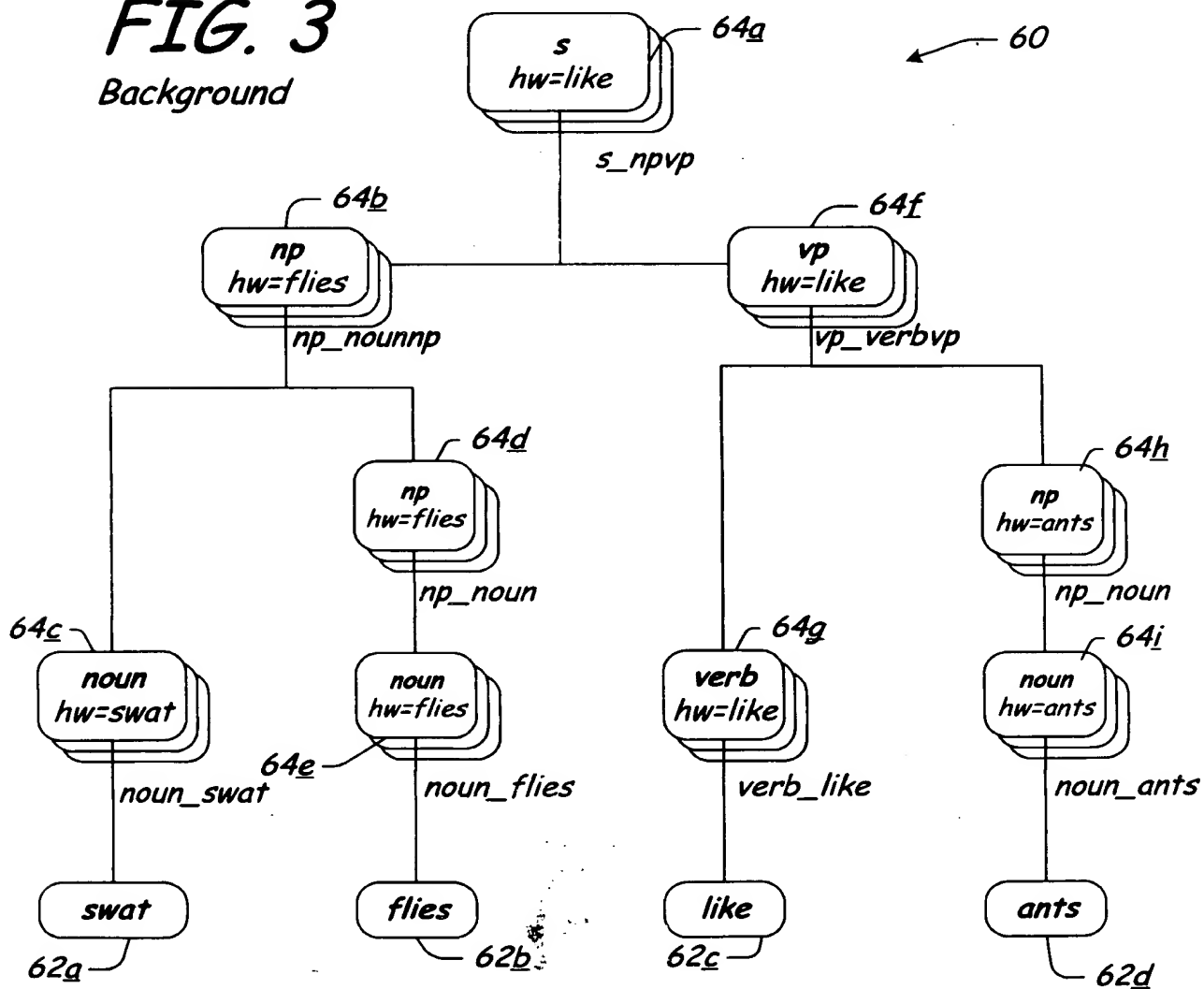


FIG. 2
Background

FIG. 3
Background



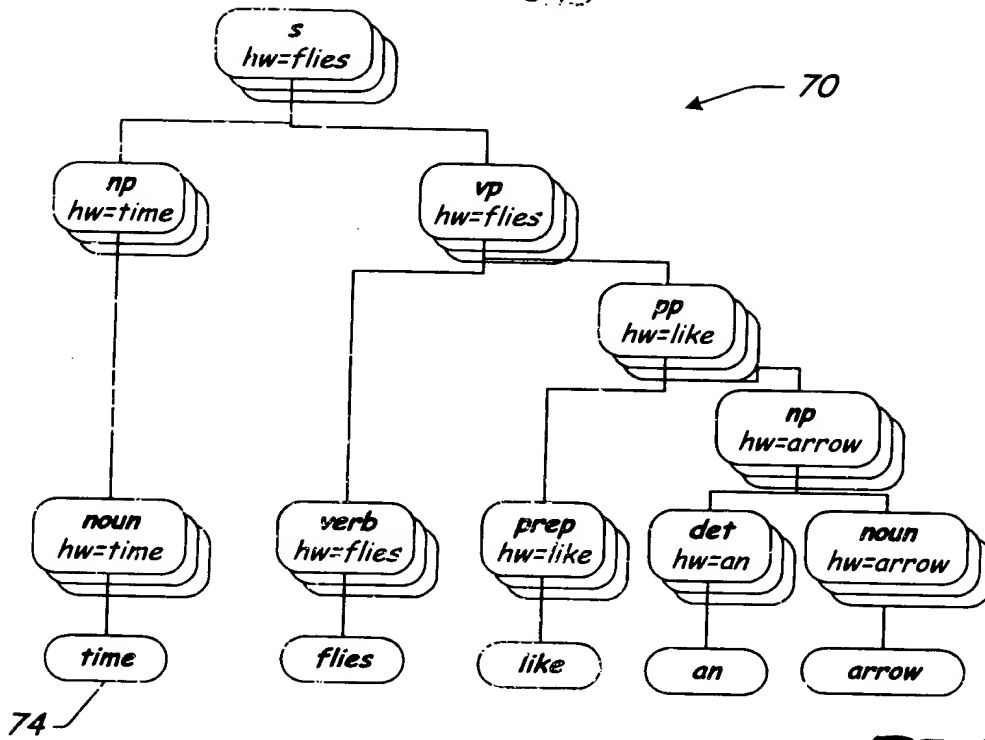


FIG. 4a
Background

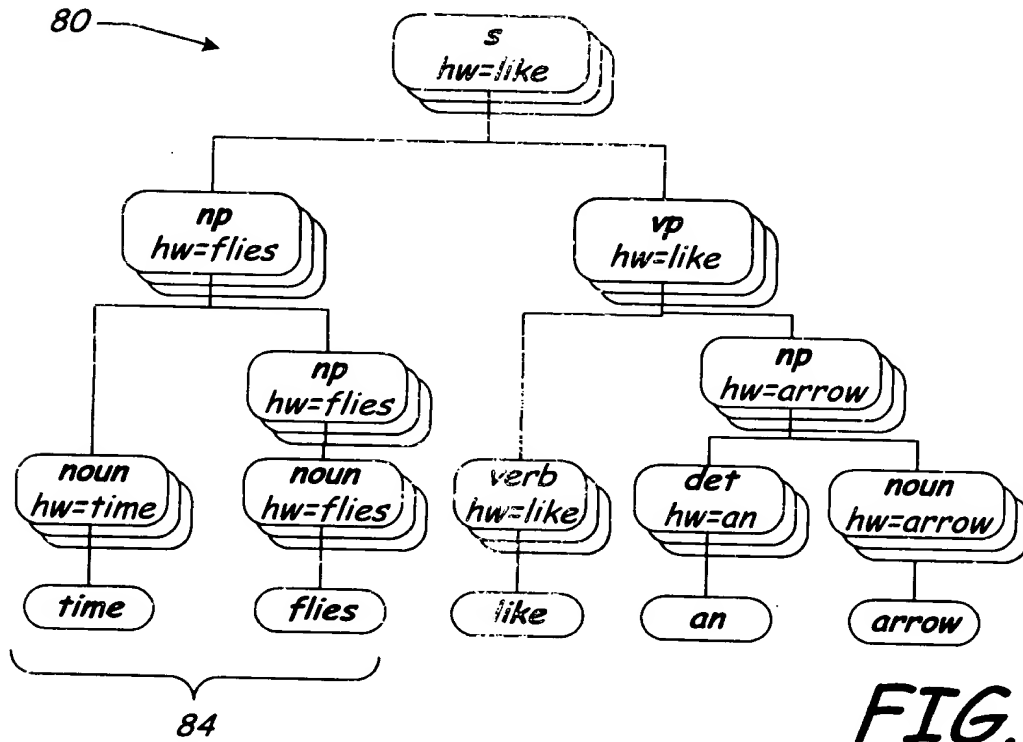


FIG. 4b
Background

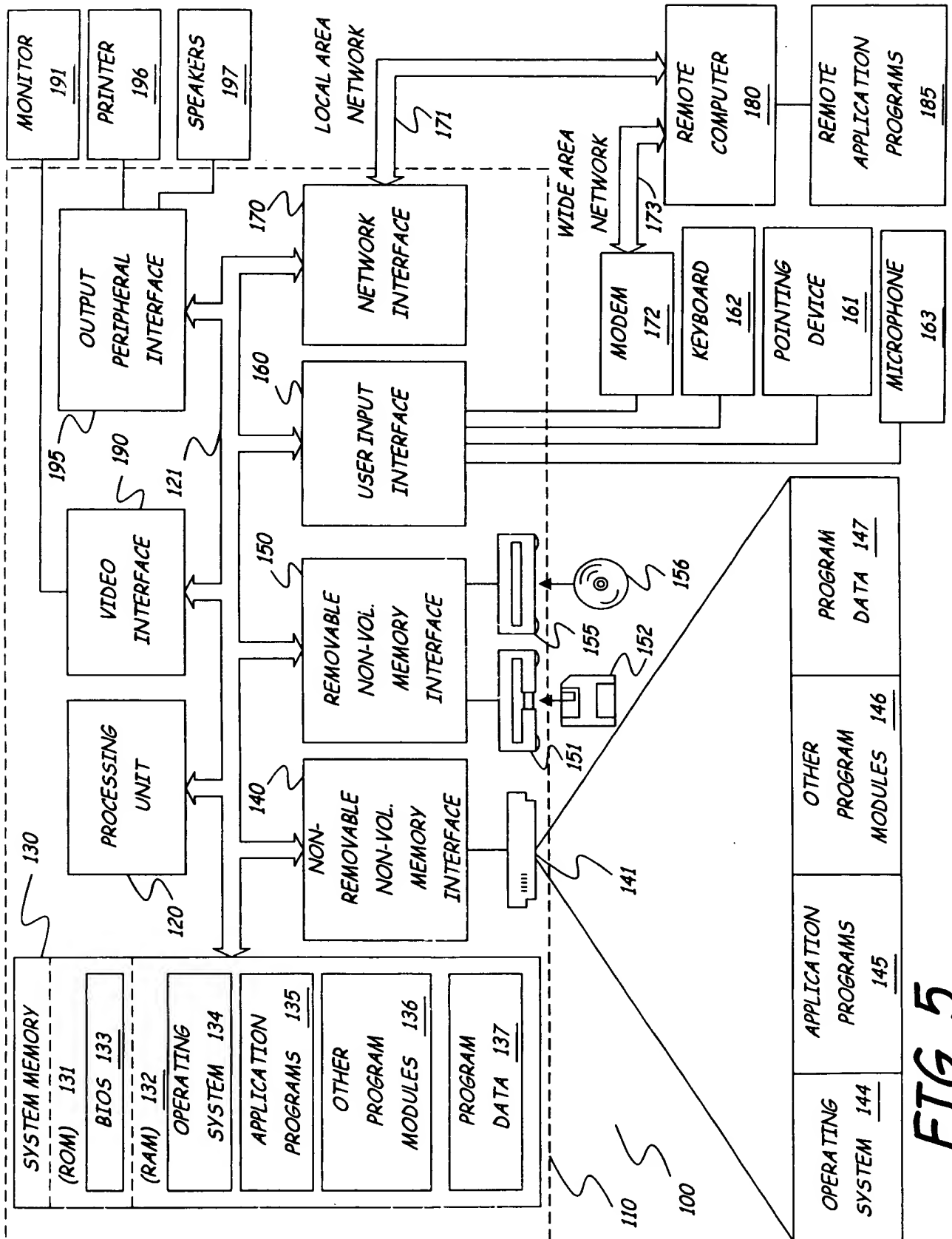
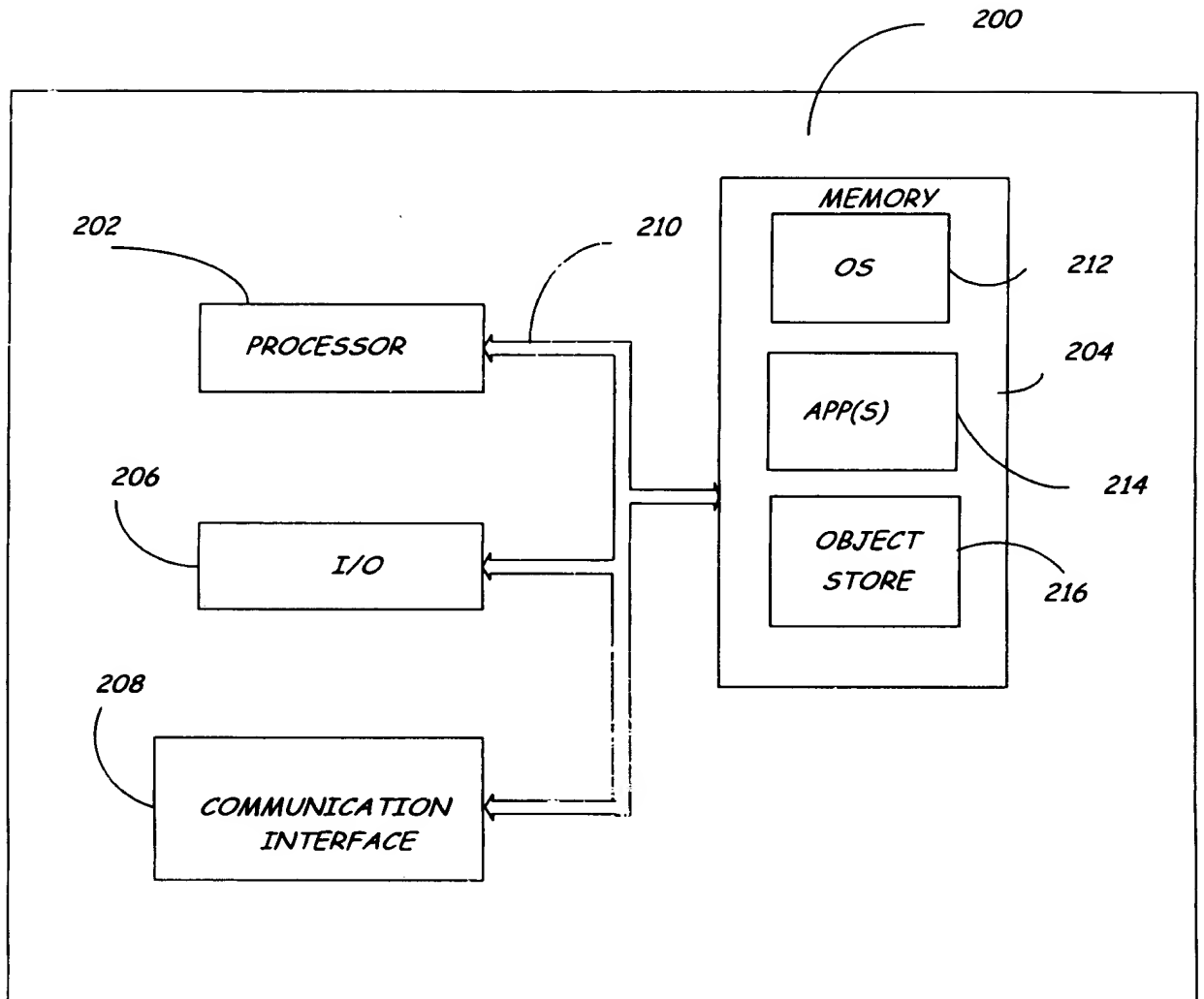
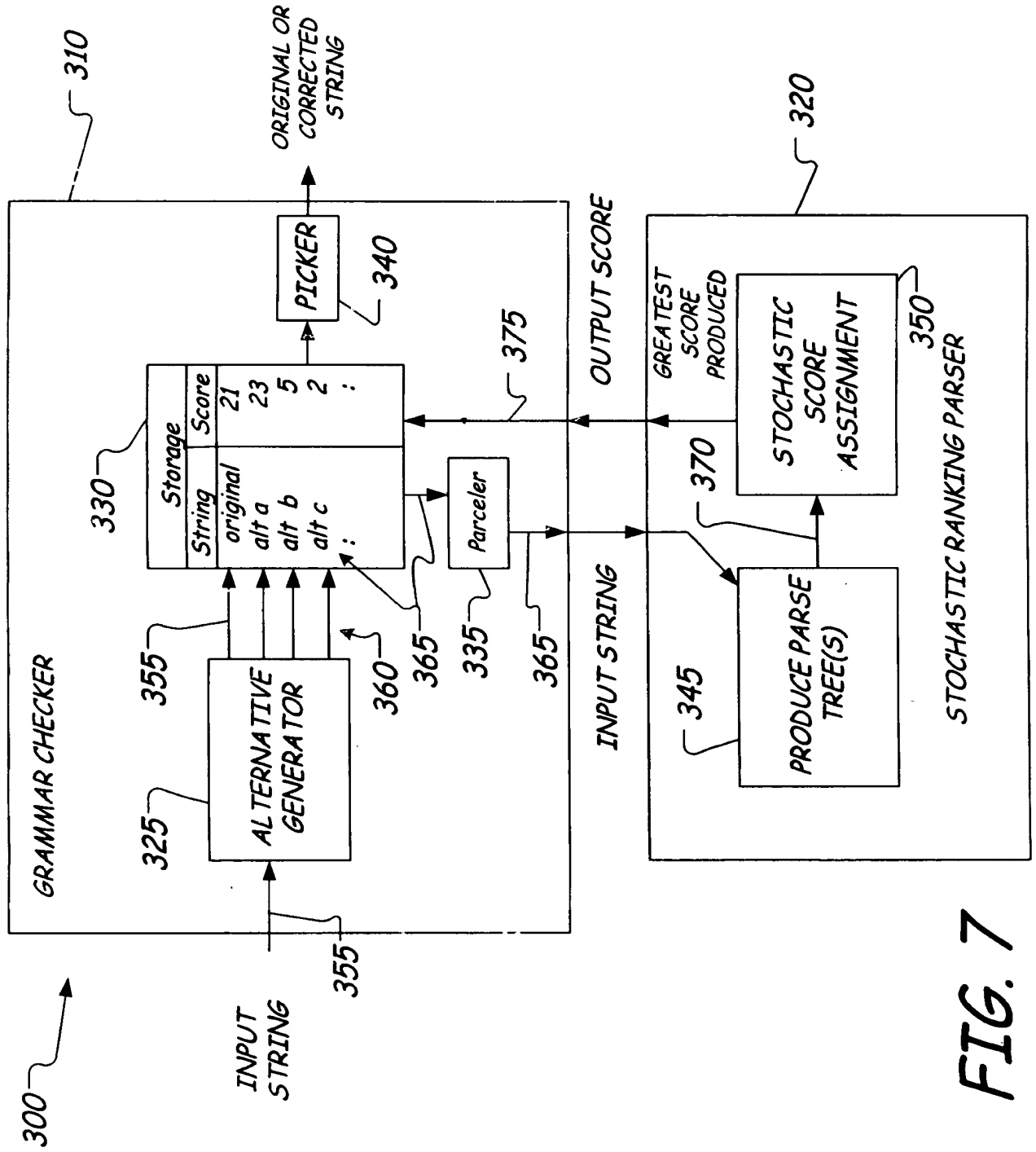
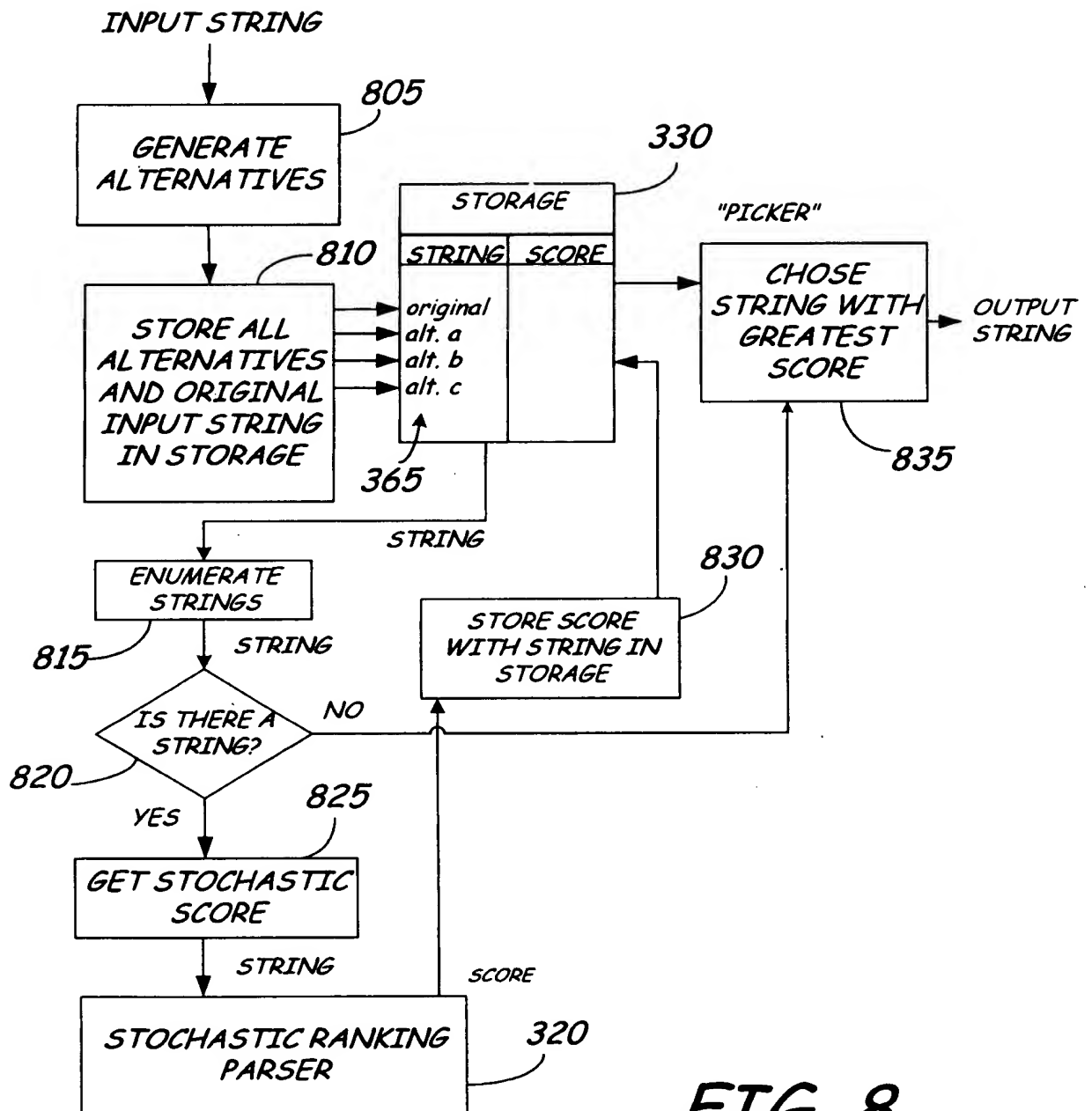


FIG. 5

**FIG. 6**





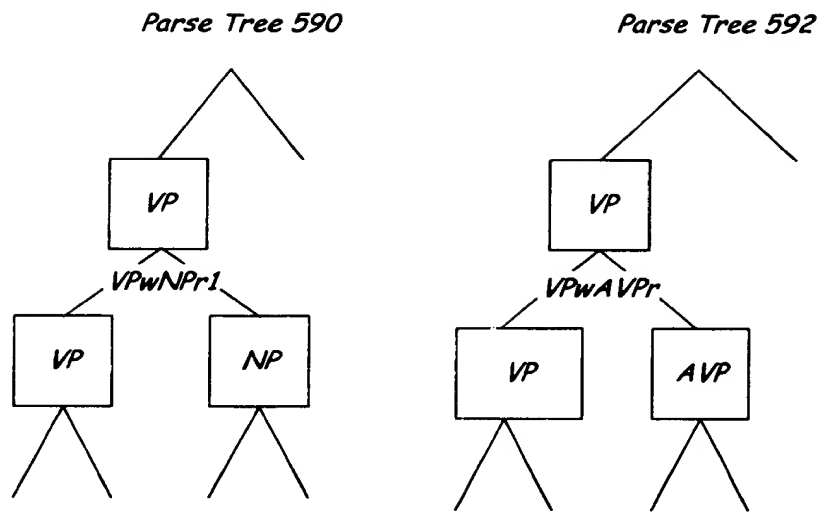


FIG. 9a

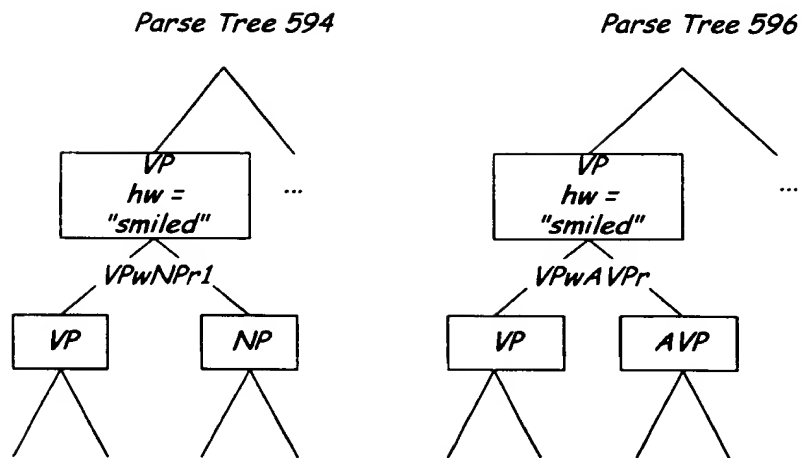


FIG. 9b

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Rule Name	Rule	Description (and an example)
VERBtoVP	VP → VERB	Promote a verb into a verb phrase
PredAdj	VP → VP AJP	Add on an adjective. <i>"It has been <u>found effective</u>"</i>
VPwNPrl	VP → VP NP	Add direct object to a VP <i>"I <u>hit Bill</u>"</i>
Perfect	VP → VP VP	Adds the VP "have" to a VP <i>"Joe <u>had gone</u>"</i>
SubjPQuant	VP → NP VP	Add quantifiers to the VP like "all", "both", ... <i>"The children have <u>all gone</u>"</i>
VPwNP1	VP → NP VP	Add noun subject to a VP <i>"<u>John jumped.</u>"</i>
SubjectAJP	VP → AJP VP	Add AJP subject to a VP <i>"<u>More surprising is his attitude</u>"</i>
InvertAJPwS	VP → AJP VP	Add final modifier, AJP, to the left of a VP <i>"<u>More remarkable still, he went</u>"</i>
Topicalization	VP → NP VP	Add object of VP, NP, to the left of a VP <i>"<u>A better-looking man I have not seen</u>"</i>

FIG. 10

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FIG. 11a

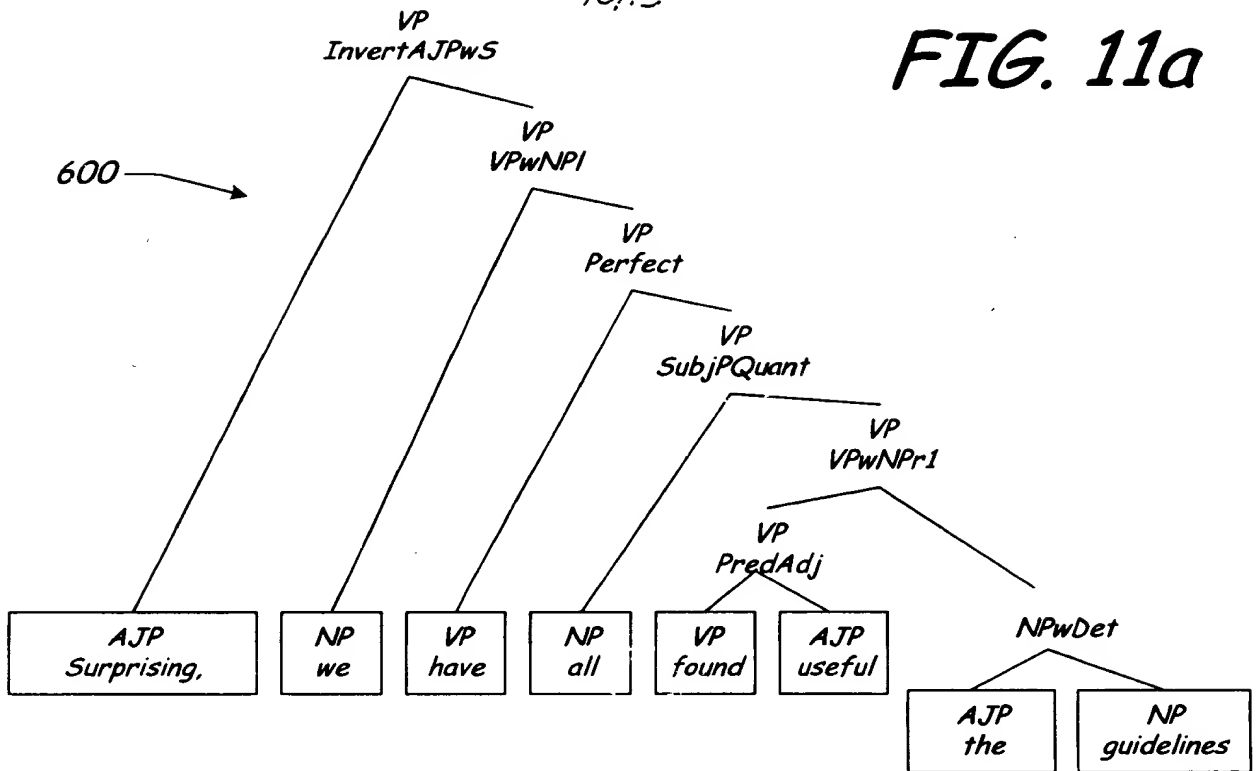


FIG. 11b

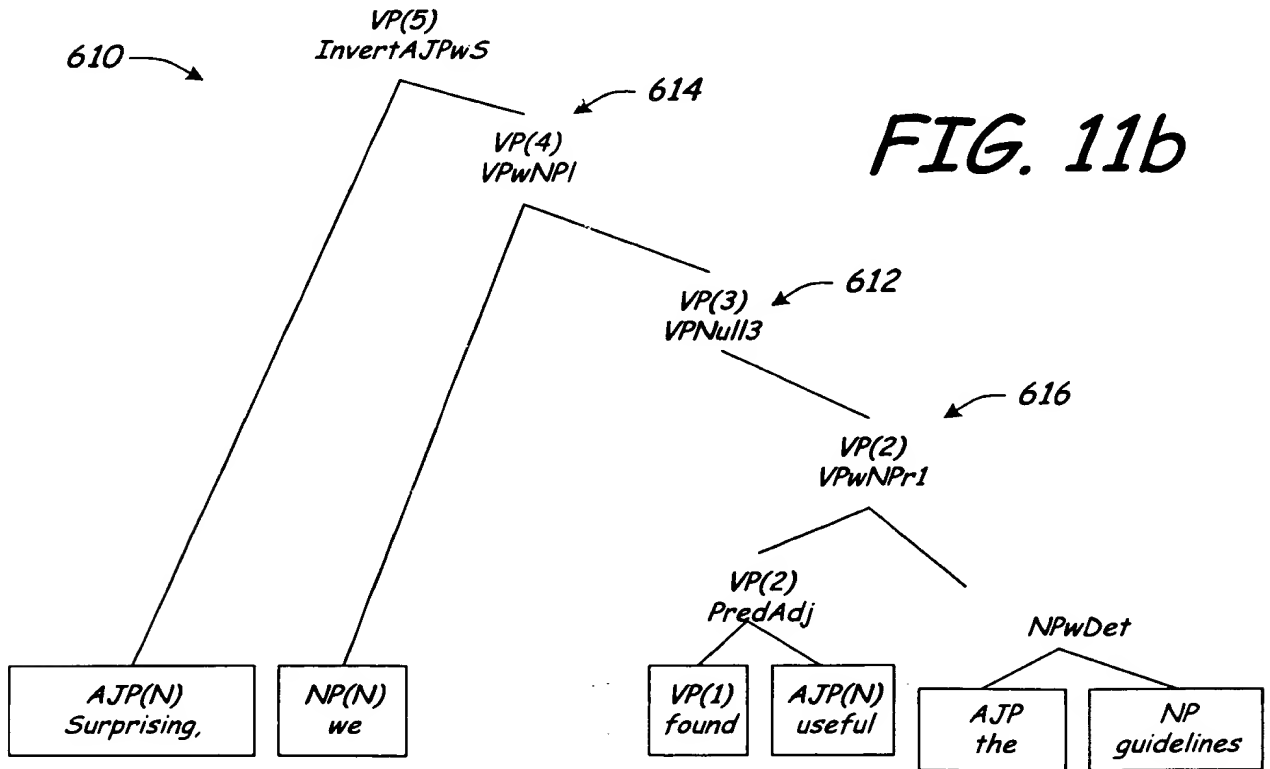


FIG. 12

Phrase Level	Rule Name	Rule	Level Description
1	VERBtoVP	VP(1) → VERB(PL_Verb_Max)	Create a VP
	PredAdj	VP(2) → VP(1) AJP(PL_AJP_Max)	Add post modifiers
	VPwNP1	VP(2) → VP(1) NP(PL_AJP_Max)	
	VPNull2	VP(2) → VP(1)	
2	Perfect	VP(3) → VP(1) VP(2,3)	Add "have" and quantifiers
	SubjPQuant	VP(3) → NP(PL_NP_Max) VP(2,3)	
	VPNull3	VP(3) → VP(2)	
	VPwNP1	VP(4) → NP(PL_NP_Max) VP(3)	Add subject
3	SubjectAJP	VP(4) → AJP(PL_AJP_Max) VP(3)	
	VPNull4	VP(4) → VP(3)	
	InvertAJPwS	VP(5) → AJP(PL_AJP_Max) VP(4)	Add modifiers to VPs that have a subject
	Topicalization	VP(5) → NP(PL_NP_Max) VP(4)	
	VPNull5	VP(5) → VP(4)	

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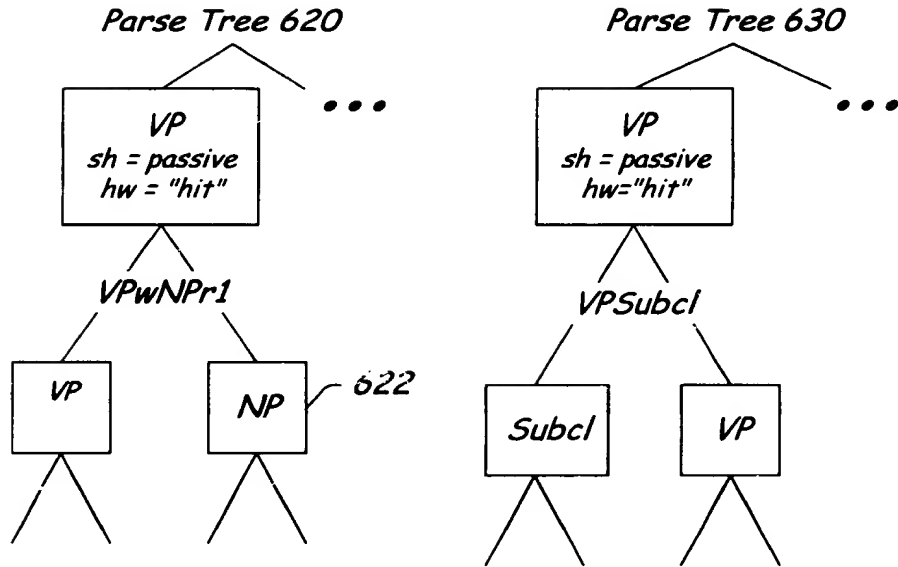


FIG. 13

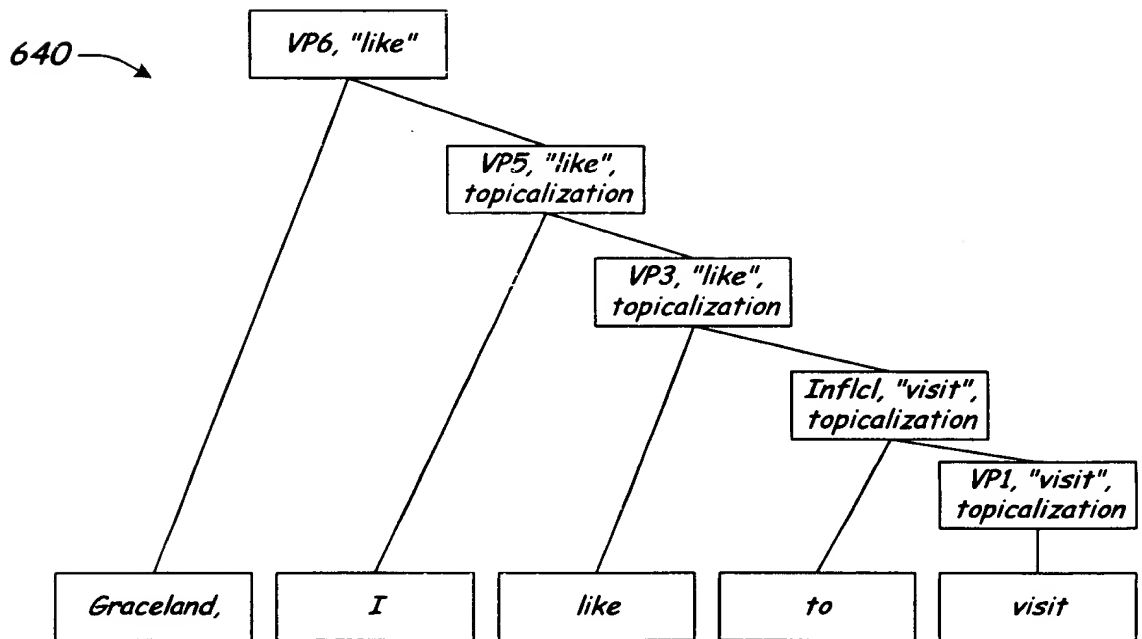
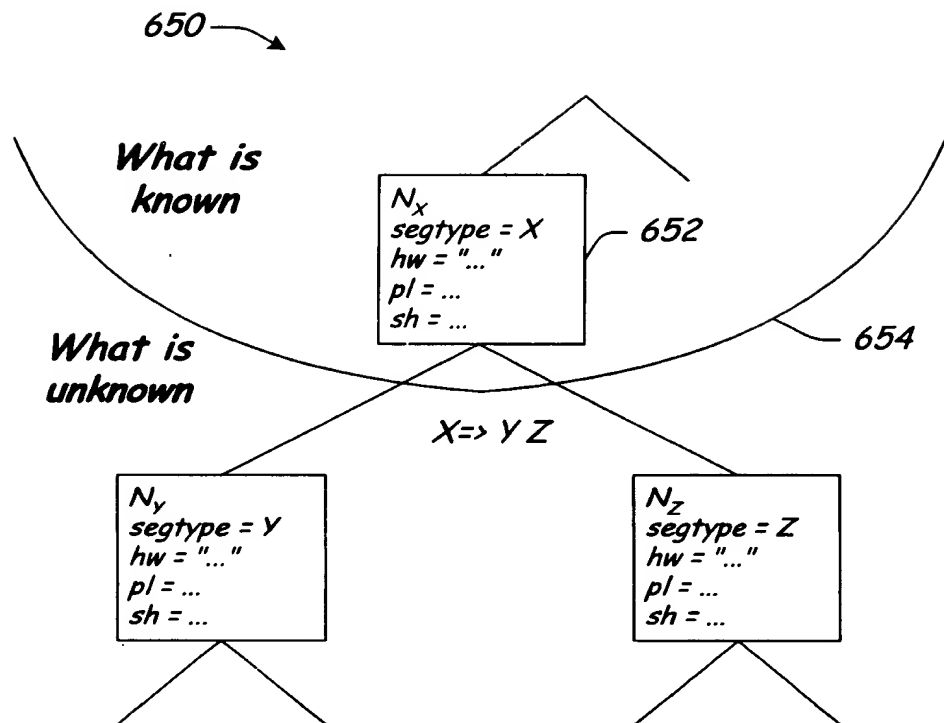


FIG. 14

**FIG. 15**